

Chapter 3 SEARCH AND RESCUE PROCEDURES

A. SAR MISSION ASSIGNMENT

1. A Coast Guard air station or other designated call out authority will provide SAR mission assignments to Auxiliary aircraft facilities. The Auxiliary pilot must have demonstrated proficiency in the search patterns to be used so that the assignments can be carried out immediately. The SAR procedure flight check required of first pilots and aircraft commanders shall fulfill this requirement.
2. The aircraft shall be properly certified under FAA rules and regulations. It shall have all required equipment on board to include Personal Flotation Device's (PFD) for each occupant, life rafts capable of carrying all occupants, a marine radio and safety signaling devices. The Aircraft shall also have cold water immersion suits in accordance with reference (b), and shall, unless given a waiver by the director, have either a GPS or LORAN unit in order to accept the mission.
3. The directions of the SMC or the OSC should be followed provided they do not pose a hazard to the aircraft or crew. If the aircraft commander is unwilling or unable to comply with them, the SMC must be immediately notified of that decision.
4. In many instances, Auxiliary pilots have accumulated local knowledge concerning patterns and geographical features which may affect the success of a search. This knowledge, plus the capabilities of the aircraft should be used to make recommendations to the operational commander.
5. A search request may commence with a ground briefing or you may be asked to initiate one after you are airborne. It is obvious that the aircrew will have more time and better conditions to plan a search if they have a ground briefing. However if a SAR mission is requested after the aircraft is already airborne and is engaged in another type of mission there are various considerations that must be evaluated by the PIC before accepting the mission.
6. At the minimum the pilot must be aware of and evaluate the following flight conditions: time aloft, fuel remaining, forecasted weather and crew fatigue. Depending on these conditions or other circumstances the pilot may decline the mission, may accept the mission or may indicate that he will first have to refuel and then proceed.
7. The route of flight is important. Non-pilots requesting an Auxiliary aircraft response may not know about controlled airspace.
8. The aircrew must be familiar with the type of directions that will be given by the group radio operator. For example, sometimes the term creep is used; other times it

may be called a minor axis. Terms such as center point or central point may be used. Are the directions in true or magnetic bearing?

9. When you receive directions, and you have the slightest doubt, ask for clarification. Prior to communications training, the FSO-OP and the FSO-MT from the Auxiliary should meet with the Group/Air Station Operations Officer to ensure that standard of communications terminology exists.
10. It is important to notify ATC that an operation is in progress. Inform them of the location, altitude, type of aircraft, when the search will commence and when it will terminate. ATC may want you to squawk 1277 which is the SAR code. You can refer to your aircraft as "Rescue XXX".

B. CREW BRIEFING

1. Since the information used in briefing the search crew may originate from more than one source, it is important that the briefer or the PIC garner all the relevant information into one briefing package.
2. In accordance with reference (b), briefings are required for all personnel on board for all flights. Ample time should be allowed before takeoff for the crew briefing. The briefing is especially important for a SAR mission. It should be clear to all crewmembers as to the specific sectors they will be assigned to search. Not to be overlooked in the course of the briefing are emergency procedures, aircraft peculiarities such as airframe masking, emergency exits and equipment usage.
3. The search aspect of the brief must include the CSP (Commence Search Point), the type of search pattern to fly and a full description of what to look for. Other pertinent information, includes but is not limited to:
 - a. Track length (necessary for most patterns)
 - b. Sweep width
 - c. Creep direction (major and minor axis)
 - d. Location of other units involved in the search
 - e. Separations if other aircraft are involved
 - f. Communication frequencies to be used
 - g. Altitude to be flown
 - h. Corner points for a 'P' search
 - i. Number of legs to fly

j. End point

C. SURFACE CRAFT DISTRESS

1. A ship in distress may involve a large vessel still afloat but in need of assistance. In such a case, the detection probability is far greater than that of a small pleasure craft adrift in heavy weather. Large vessels are good visual and radar targets and often are able to provide an accurate fix by radio. A drifting, disabled vessel is more difficult to detect than one underway. Small surface vessels may prove difficult to detect by either visual or electronic means. Small craft and fishing vessels are even harder to detect under adverse circumstances and search aircraft, in many instances, have flown directly overhead without making visual contact.
2. If a distressed vessel has foundered before the arrival of rescue units, the most probable objects to look for will be lifeboats, rafts, debris, oil, and personnel in the water. Lifeboats may vary in size from 12 to 50 feet in length and be of any color. Rafts may also be of any color and are found in a variety of sizes and shapes ranging from 4 feet in diameter and box shaped to 20 feet in diameter and circular.
3. Initially, the scene of the disaster may be marked by debris and perhaps an oil slick. The debris will be found downwind of the oil slick and boats and rafts are downwind of the debris. Persons in the water are usually found in the area of the debris clinging to floating objects. If the vessel was abandoned some time before sinking, lifeboats, rafts, and personnel may sometimes be found upwind of the point of foundering. Because of this, search units should search both upwind and downwind of the oil and debris area.
4. Small craft, such as yachts and fishing vessels, usually carry only small dinghies. Some have only balsa or pneumatic rafts while others have only life jackets. Dinghies may be any color but are usually white or mahogany.
5. Lifeboats from large vessels are normally equipped with ample pyrotechnic visual distress signals (VDS) and if more than one boat is launched, they can expect to be grouped or tied together, making sighting easier. Boats and rafts from small craft usually have a limited supply of visual distress signals, frequently no more than the minimum required by law.

D. AIRCRAFT DISTRESS

1. If the search is over land for a downed aircraft and the area where the search is to be conducted is heavily wooded terrain, Observers should be briefed to look for broken or scarred trees, bits of shiny metal beneath the trees, burned out areas which look fresh, and parachutes or visual ground signals which may have been set out by survivors.

2. In a search over water for survivors of an aircraft accident, observers should be briefed to look for scattered wreckage such as oxygen bottles, floor boards, pieces of debris, partial or whole rafts or seat cushions. In some cases, there may be nothing other than an oil slick.

E. ALERT AND LOCATE AIDS

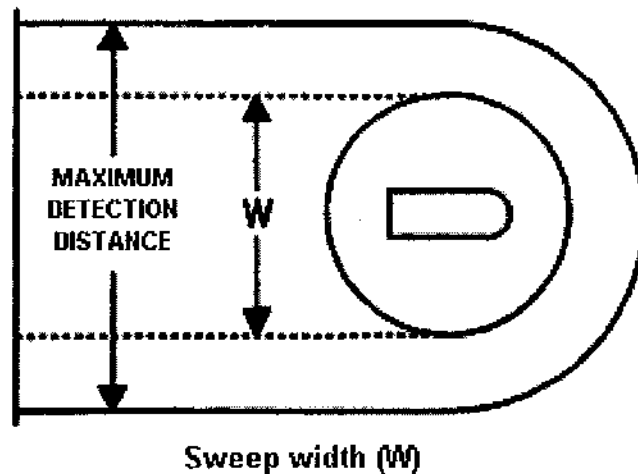
1. Alert and locate aids for both day and night uses are divided into two general categories, visual and non-visual. The required VDS for small craft fall into the category of visual aids. All search personnel should therefore be familiar with the appearance and characteristics of the various visual and non-visual detection aids carried on boats, lifeboats, rafts and as personal survival gear. See Table 3.3 for further information.
2. Because it is difficult to sight a lifeboat or a life raft from the air, the first contact will often be made through a visual detection aid (VDA). VDA's comprise the following: pyrotechnics, dye markers, signal mirrors, or electronic detection aids such as an Emergency Locator Transmitter (ELT), Emergency Position Indicating Radiobeacon (EPIRB), or a portable two way radio.
3. Survivors may use balloons and box kites for raising antennas of emergency radio sets. These can indicate the presence of a life raft but can be a hazard to search aircraft. Be alert for such hazards.
4. Dye markers release a yellow-green or aluminum powder slick which remains for approximately two hours on a calm sea but only 15 minutes on rough seas. The surface to surface range of visibility is extremely limited. However, from an altitude of 3,000 feet, the slick can be seen in daylight at a distance of approximately two miles.
5. Signaling mirrors are one of the best daylight aids. When properly operated under ideal conditions, they are visible at distances of 10 miles or more. In addition, these are reusable devices.
6. Paulins, canvas protective covers used on life rafts, are painted red, blue, or yellow and may be used for signaling. They can also be used for limited messages using the surface to air signals. See reference (c), Appendix C for further details.
7. Pyrotechnic signals are used as both day and night visual aids. Hand held or floating smoke signals are used in daytime. They emit a large volume of bright orange smoke that remains visible for several minutes. Under high wind conditions the smoke will dissipate rapidly making the signal less effective. Hand held flares, although better at night, are also used as daytime signals. The approved flares are much brighter than the old fuse type and are therefore quite visible from an aircraft.

8. A common pyrotechnic signal-launching device is the flare pistol. They come in various sizes including the so-called pen-gun, which is the size of a fountain pen and fits in the pocket. The flare is usually red in color. The meteor signal fireball can reach altitudes of 200 to 1,800 feet depending on the size and type.
9. Emergency radio sets consist of transmitters or transceivers. The ELT, with which Auxiliary aviators are familiar, is being marketed for marine use as an EPIRB. Class A and B EPIRB's transmit a continuous warbling signal on 121.5 MHz and 243 MHz which are the same frequencies used by the ELT in an aircraft. Some also have capabilities for communication as well as alert/locate. Category 1 EPIRB's transmit on 406 MHz and 121.5 MHz. Each Category 1 EPIRB has a serial number which is registered when the unit is purchased and identifies the vessel on which it is located. When the Category 1 EPIRB is activated, the serial number is transmitted as a data burst on 406 MHz to a satellite which relays the information and location of the transmitter to ground stations. A continuous signal on 121.5 MHz is transmitted for tracking by direction finding equipment. Marine environment EPIRB's are designed to float and to transmit their signal while in the water. Class C EPIRB's use VHF-FM Channels 15 and 16. These are required on certain commercial passenger vessels operating on the Great Lakes. The disadvantage of a Class C EPIRB is that the transmission is not continuous and is not relayed via satellite. As the distribution of EPIRBs increases it becomes more important that aircrews be proficient in the ELT locating techniques discussed later in this chapter.
10. There may be times when a close check must be made of a vessel to determine if there is trouble. A small boat in deep water and showing no wake may be unable to anchor or use power. If a close fly-by is performed, two additional signals may indicate distress. An orange flag with a black ball and square is an accepted visual distress signal as is the raising and lowering of both arms at the side. Neither of these signals is very effective when viewed from aircraft since they are not visible from more than several hundred yards, although binoculars may extend this somewhat.

F. SEARCH VISIBILITY

1. Maximum detection range is the distance at which an object can be seen and recognized from the height at which the aircraft is flying. This is a critical factor in determining the characteristics of the search pattern as it limits the sweep width of the pattern. The maximum detection range is always less than the meteorological visibility. The sweep width (W) is usually selected to be considerably less than twice the search visibility in order to increase the probability of detecting the search target, see figure 3.1.

Fig. 3.1 Sweep Width



2. It is evident that the sweep width can vary for the same situation depending on the probability of detection that is desired. For Auxiliary application, the Coast Guard unit in charge of the search mission may provide a detailed calculation such as that shown in the National SAR Manual. For simplicity, sweep widths based upon a single sweep probability of detection can be used. The following table of sweep widths for typical search targets is provided based on an altitude of 500 feet and for a clear day (one with 15 miles meteorological visibility). When the meteorological visibility is from 3 to 5 miles, the sweep widths given in table 3.2 should be reduced by two thirds for large objects and one half for small objects. In addition, the sweep widths must be reduced by 30 to 50 percent for small objects when the winds are in the 20 to 25 knot range and for large objects when the wind is in the 30 to 35 knot range. The chance for detection of small targets decreases when the wind is above 25 knots and for detection of boats when the wind is above 35 knots. Winds above 35 knots create considerable turbulence at search altitudes causing rapid crew fatigue and generally make operations by light aircraft difficult. The turbulence associated with high wind velocities is less when operating over open water offshore.
3. Altitude, depending on the search object, should be appropriate to the mission. Higher altitudes are safer although they do not increase the detection probability of even large targets. Smaller targets, such as a person in the water, will remain difficult to detect regardless of the altitude. Lower altitudes are a trade-off to safety unless the pilot is trained and current in the low-level flight regime.
4. The chance of detecting a person in the water by air search is quite low. Obviously, a low pass for verification in the event a person is sighted in the water

might be in order. However, it is more prudent to take a latitude/longitude position and report the position to surface vessels. This is also true of debris sighting...risk-reward factors, generally speaking, are not favorable for small fixed wing aircraft. As an Auxiliary aviator we do not want to jeopardize our crew or aircraft and become the problem, rather than assisting in the solving of a SAR case.

5. Keep in mind the fact that low altitude flights increase the risk factor and may be in violation of FAA regulations.

Table 3.1 Recommended Visual Search Altitudes

SEARCH TARGET	TERRAIN	ALTITUDE AGL
PERSON, CARS, LIGHT AIRCRAFT CRASHES	MODERATE	500
TRUCKS, LARGE AIRCRAFT	MODERATE	500-1000
PERSON, 1 PERSON RAFTS, SURFBOARDS, LIGHT AIRCRAFT CRASHES	WATER OR FLAT	500
SMALL TO MEDIUM SIZED BOATS, LIFE RAFTS, TRUCKS, AIRCRAFT	WATER OR FLAT	500-1500
DISTRESS SIGNALS	NIGHT	1500-2000

G. UNCORRECTED MARITIME SWEEP WIDTHS

1. Uncorrected sweep width Table 3.2 presents uncorrected sweep width data for various types for aircraft at various altitudes and visibility conditions. For aircraft enter the column for the appropriate altitude and visibility. Read down this column to the target type that most closely describes the search object. The value is the uncorrected sweep width. Interpolate as necessary.
2. For search altitudes up to 500 feet only, the values given for sweep width for a person in the water may be increased by a factor of four, if it is known that the person is wearing a personal flotation device.
3. Reduce sweep width by one half when meteorological visibility is 3 to 5 nautical miles or when surface wind is above 25 knots.
4. Reduce sweep width by two thirds when meteorological visibility is 3 to 5 miles or when surface wind is above 35 knots.

Table 3.2 Uncorrected Visual Sweep Width

FIXED WING AIRCRAFT ALTITUDES 300 and 500 FEET

FIXED-WING SEARCHING FOR	ALTITUDE 300 (FT) VISIBILITY (NM)							ALTITUDE 500 (FT) VISIBILITY (NM)						
	1	3	5	10	15	20	30	1	3	5	10	15	20	30
PERSON IN WATER	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1
RAFT 1 PERSON	0.3	0.7	0.9	1.2	1.3	1.3	1.3	0.3	0.7	0.9	1.2	1.4	1.4	1.4
RAFT 4 PERSON	0.4	0.9	1.3	1.7	2.0	2.2	2.2	0.4	1.0	1.3	1.8	2.0	2.2	2.2
RAFT 6 PERSON	0.4	1.1	1.5	2.1	2.5	2.7	2.7	0.4	1.1	1.5	2.2	2.5	2.8	2.8
RAFT 8 PERSON	0.4	1.2	1.6	2.3	2.6	2.9	2.9	0.4	1.2	1.6	2.3	2.7	2.9	2.9
RAFT 10 PERSON	0.4	1.2	1.7	2.4	2.9	3.2	3.2	0.4	1.2	1.7	2.5	2.9	3.2	3.2
RAFT 15 PERSON	0.5	1.3	1.9	2.7	3.2	3.5	4.0	0.5	1.3	1.9	2.7	3.3	3.6	4.0
RAFT 20 PERSON	0.5	1.4	2.1	3.1	3.7	4.2	4.8	0.5	1.5	2.1	3.2	3.8	4.2	4.8
RAFT 25 PERSON	0.5	1.5	2.2	3.4	4.1	4.6	5.2	0.5	1.6	2.3	3.4	4.1	4.6	5.3
POWER BOAT < 15 FT	0.4	0.8	1.1	1.4	1.6	1.7	1.7	0.4	0.9	1.2	1.5	1.7	1.8	1.8
POWER BOAT 15-25 FT	0.5	1.6	2.4	3.5	4.3	4.8	4.8	0.5	1.7	2.4	3.6	4.3	4.8	4.8
POWER BOAT 25-40 FT	0.6	2.1	3.3	5.3	6.6	7.6	9.1	0.6	2.1	3.3	5.3	6.7	7.7	9.1
POWER BOAT 40-65 FT	0.6	2.6	4.5	8.1	10.9	13.1	16.4	0.6	2.7	4.5	8.1	10.9	13.1	16.5
POWER BOAT 65-90 FT	0.6	2.8	5.0	9.7	13.5	16.6	21.6	0.6	2.8	5.0	9.8	13.5	16.7	21.7
SAIL BOAT 15 FT	0.5	1.5	2.2	3.2	3.8	4.3	4.3	0.5	1.6	2.2	3.2	3.9	4.3	4.3
SAIL BOAT 20 FT	0.6	1.8	2.6	4.0	4.9	5.6	5.6	0.6	1.8	2.7	4.1	5.0	5.6	5.6
SAIL BOAT 25 FT	0.6	2.0	3.1	4.8	6.0	6.9	6.9	0.6	2.0	3.1	4.9	6.1	7.0	7.0
SAIL BOAT 30 FT	0.6	2.3	3.6	5.9	7.5	8.8	10.6	0.6	2.3	3.6	5.9	7.6	8.8	10.6
SAIL BOAT 40 FT	0.6	2.6	4.3	7.5	10.0	11.9	14.8	0.6	2.6	4.3	7.6	10.0	11.9	14.8
SAIL BOAT 50 FT	0.6	2.7	4.6	8.4	11.3	13.6	17.3	0.6	2.7	4.6	8.4	11.3	13.7	17.3
SAIL BOAT 65-75 FT	0.6	2.8	4.9	9.3	12.7	15.5	20.0	0.6	2.8	4.9	9.3	12.7	15.5	20.0
SAIL BOAT 75-90 FT	0.6	2.8	5.1	9.9	13.7	16.9	22.1	0.6	2.8	5.1	9.9	13.7	17.0	22.1
SHIP 90-150 FT	0.6	2.9	5.4	11.1	15.9	20.0	26.9	0.6	2.9	5.4	11.1	15.9	20.1	26.9
SHIP 150-300 FT	0.6	3.0	5.7	12.1	18.8	24.7	34.8	0.6	3.0	5.7	12.5	18.9	24.7	34.8
SHIP > 300 FT	0.7	3.0	5.8	13.2	20.8	27.9	41.4	0.7	3.0	5.8	13.2	20.6	27.9	41.4

Table 3.2 Uncorrected Visual Sweep Width cont.

FIXED WING AIRCRAFT ALTITUDES 750 and 1000 FEET

FIXED-WING SEARCHING FOR	ALTITUDE 750 (FT) VISIBILITY (NM)							ALTITUDE 1000 (FT) VISIBILITY (NM)						
	1	3	5	10	15	20	30	1	3	5	10	15	20	30
PERSON IN WATER	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1
RAFT 1 PERSON	0.3	0.7	0.9	1.2	1.4	1.4	1.4	0.3	0.7	0.9	1.2	1.4	1.4	1.4
RAFT 4 PERSON	0.4	1.0	1.3	1.8	2.1	2.2	2.2	0.3	1.0	1.3	1.8	2.1	2.3	2.3
RAFT 6 PERSON	0.4	1.1	1.6	2.2	2.6	2.8	2.8	0.4	1.1	1.6	2.2	2.6	2.8	2.8
RAFT 8 PERSON	0.4	1.2	1.7	2.3	2.7	3.0	3.0	0.4	1.2	1.7	2.4	2.8	3.0	3.0
RAFT 10 PERSON	0.4	1.3	1.8	2.5	3.0	3.3	3.3	0.4	1.3	1.8	2.6	3.0	3.3	3.3
RAFT 15 PERSON	0.4	1.4	1.9	2.8	3.3	3.7	4.1	0.4	1.4	2.0	2.8	3.4	3.7	4.2
RAFT 20 PERSON	0.5	1.5	2.2	3.2	3.8	4.3	4.9	0.4	1.5	2.2	3.2	3.9	4.3	4.9
RAFT 25 PERSON	0.5	1.6	2.3	3.5	4.2	4.7	5.4	0.4	1.6	2.3	3.5	4.2	4.7	5.4
POWER BOAT < 15 FT	0.4	0.8	1.2	1.6	1.8	1.9	1.9	0.4	1.0	1.3	1.7	1.8	2.0	2.0
POWER BOAT 15-25 FT	0.5	1.7	2.4	3.6	4.4	4.9	4.9	0.5	1.7	2.5	3.7	4.4	5.0	5.0
POWER BOAT 25-40 FT	0.6	2.1	3.3	5.3	6.7	7.7	9.2	0.5	2.2	3.4	5.4	6.8	7.8	9.3
POWER BOAT 40-65 FT	0.6	2.7	4.5	8.2	10.9	13.1	16.5	0.6	2.7	4.5	8.2	10.9	13.1	16.6
POWER BOAT 65-90 FT	0.6	2.8	5.0	9.8	13.5	16.7	21.7	0.6	2.8	5.1	9.8	13.6	16.7	21.7
SAIL BOAT 15 FT	0.5	1.6	2.3	3.3	3.9	4.4	4.4	0.5	1.6	2.3	3.3	4.0	4.4	4.4
SAIL BOAT 20 FT	0.5	1.8	2.7	4.1	5.0	5.7	5.7	0.5	1.8	2.7	4.2	5.1	5.7	5.7
SAIL BOAT 25 FT	0.6	2.1	3.1	5.0	6.2	7.0	7.0	0.5	2.1	3.2	5.0	6.2	7.1	7.1
SAIL BOAT 30 FT	0.6	2.3	3.6	6.0	7.6	8.9	10.7	0.6	2.3	3.6	6.0	7.6	8.9	10.7
SAIL BOAT 40 FT	0.6	2.6	4.3	7.6	10.0	11.9	14.9	0.6	2.6	4.3	7.6	10.9	12.0	14.9
SAIL BOAT 50 FT	0.6	2.7	4.6	8.5	11.4	13.7	17.4	0.6	2.7	4.6	8.5	11.4	13.7	17.4
SAIL BOAT 65-75 FT	0.6	2.8	4.9	9.3	12.7	15.6	20.0	0.6	2.8	4.9	9.3	12.8	15.6	20.1
SAIL BOAT 75-90 FT	0.6	2.8	5.1	9.9	13.8	17.0	22.2	0.6	2.8	5.1	9.9	13.8	17.0	22.2
SHIP 90-150 FT	0.6	2.9	5.4	11.1	15.9	20.1	27.0	0.6	2.9	5.4	11.1	15.9	20.1	27.0
SHIP 150-300 FT	0.6	3.0	5.7	12.5	18.9	24.7	34.9	0.6	3.0	5.7	12.5	18.9	24.7	34.9
SHIP > 300 FT	0.7	3.0	5.8	13.2	20.6	27.9	41.4	0.6	3.0	5.8	13.2	20.6	27.9	41.4

Table 3.2 Uncorrected Visual Sweep Width cont.
FIXED WING AIRCRAFT ALTITUDES 1500 and 2000
FEET

FIXED-WING SEARCHING FOR	ALTITUDE 1500(FT) VISIBILITY (NM)							ALTITUDE 2000 (FT) VISIBILITY (NM)						
	1	3	5	10	15	20	30	1	3	5	10	15	20	30
PERSON IN WATER	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
RAFT 1 PERSON	0.2	0.7	0.9	1.3	1.4	1.4	1.4	.01	0.6	0.9	1.2	1.4	1.4	1.4
RAFT 4 PERSON	0.3	1.0	1.3	1.8	2.1	2.3	2.3	.02	0.9	1.3	1.9	2.2	2.3	2.3
RAFT 6 PERSON	0.3	1.1	1.6	2.3	2.6	2.9	2.9	.02	1.1	1.6	2.3	2.7	2.9	2.9
RAFT 8 PERSON	0.3	1.2	1.7	2.4	2.8	3.1	3.1	.02	1.2	1.7	2.5	2.9	3.2	3.2
RAFT 10 PERSON	0.3	1.3	1.8	2.6	3.1	3.4	3.4	.02	1.2	1.8	2.7	3.1	3.5	3.5
RAFT 15 PERSON	0.3	1.4	2.0	2.9	3.4	3.8	4.3	0.2	1.4	2.0	3.0	3.5	3.9	4.4
RAFT 20 PERSON	0.4	1.5	2.2	3.3	4.0	4.4	5.1	0.3	1.5	2.2	3.4	4.0	4.5	5.1
RAFT 25 PERSON	0.4	1.6	2.4	3.6	4.3	4.8	5.6	0.3	1.6	2.4	3.6	4.4	4.9	5.7
POWER BOAT < 15 FT	0.3	1.0	1.3	1.7	2.0	2.1	2.1	0.2	1.0	1.3	1.8	2.0	2.2	2.2
POWER BOAT 15-25 FT	0.4	1.7	2.5	3.7	4.5	5.1	5.1	0.3	1.7	2.5	3.8	4.6	5.1	5.1
POWER BOAT 25-40 FT	0.5	2.2	3.4	5.5	6.8	7.9	9.4	0.3	2.2	3.4	5.5	6.9	8.0	9.5
POWER BOAT 40-65 FT	0.5	2.6	4.5	8.2	11.0	13.2	16.6	0.4	2.6	4.5	8.3	11.0	13.3	16.7
POWER BOAT 65-90 FT	0.5	2.8	5.1	9.8	13.6	16.7	21.8	0.4	2.8	5.0	9.8	13.6	16.8	21.8
SAIL BOAT 15 FT	0.4	1.6	2.3	3.4	4.1	4.5	4.5	0.3	1.6	2.3	3.5	4.1	4.6	4.6
SAIL BOAT 20 FT	0.4	1.8	2.8	4.2	5.2	5.8	5.8	0.3	1.8	2.8	4.3	5.2	5.9	5.9
SAIL BOAT 25 FT	0.5	2.1	3.2	5.1	6.3	7.2	7.2	0.3	2.1	3.3	5.2	6.4	7.3	7.3
SAIL BOAT 30 FT	0.5	2.3	3.7	6.1	7.7	9.0	10.8	0.3	2.3	3.7	6.1	7.8	9.1	10.9
SAIL BOAT 40 FT	0.5	2.6	4.3	7.6	10.1	12.0	14.9	0.4	2.6	4.3	7.7	10.1	12.1	15.0
SAIL BOAT 50 FT	0.5	2.7	4.6	8.5	11.4	13.8	17.5	0.4	2.7	4.6	8.6	11.5	13.9	17.5
SAIL BOAT 65-75 FT	0.5	2.8	4.9	9.4	12.8	15.7	20.2	0.4	2.7	4.9	9.4	12.9	15.7	20.2
SAIL BOAT 75-90 FT	0.5	2.8	5.1	10.0	13.8	17.1	22.3	0.4	2.8	5.1	10.0	13.9	17.1	22.3
SHIP 90-150 FT	0.5	2.9	5.4	11.1	16.0	20.1	27.0	0.4	2.9	5.4	11.1	16.0	20.1	27.1
SHIP 150-300 FT	0.5	3.0	5.7	12.5	18.9	24.7	34.9	0.4	2.9	5.7	12.5	18.9	24.7	34.9
SHIP > 300 FT	0.6	3.0	5.8	13.2	20.7	27.9	41.4	0.5	3.0	5.8	13.2	20.7	27.9	41.5

Table 3.2 Uncorrected Visual Sweep Width cont.

**FIXED WING AIRCRAFT ALTITUDES 2500 and 3000
FEET**

FIXED-WING SEARCHING FOR	ALTITUDE 2500 (FT) VISIBILITY (NM)							ALTITUDE 3000 (FT) VISIBILITY (NM)						
	1	3	5	10	15	20	30	1	3	5	10	15	20	30
PERSON IN WATER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAFT 1 PERSON	0.1	0.5	0.8	1.2	1.4	1.4	1.4	0.1	0.5	0.8	1.1	1.3	1.3	1.3
RAFT 4 PERSON	0.1	0.8	1.3	1.8	2.2	2.4	2.4	0.1	0.7	1.2	1.8	2.1	2.3	2.3
RAFT 6 PERSON	0.1	1.0	1.5	2.3	2.7	2.9	2.9	0.1	0.9	1.5	2.2	2.7	2.9	2.9
RAFT 8 PERSON	0.1	1.1	1.7	2.5	2.9	3.2	3.2	0.1	1.0	1.6	2.5	2.9	3.2	3.2
RAFT 10 PERSON	0.2	1.2	1.8	2.7	3.2	3.5	3.5	0.1	1.1	1.8	2.7	3.2	3.5	3.5
RAFT 15 PERSON	0.2	1.3	2.0	3.0	3.6	4.0	4.5	0.1	1.2	2.0	3.0	3.6	4.0	4.5
RAFT 20 PERSON	0.2	1.4	2.2	3.4	4.1	4.6	5.2	0.1	1.4	2.2	3.4	4.1	4.6	5.3
RAFT 25 PERSON	0.2	1.5	2.4	3.7	4.5	5.0	5.7	0.1	1.5	2.4	3.7	4.5	5.1	5.8
POWER BOAT < 15 FT	0.1	0.9	1.3	1.8	2.1	2.2	2.2	0.1	0.8	1.3	1.8	2.1	2.3	2.3
POWER BOAT 15-25 FT	0.2	1.6	2.5	3.8	4.6	5.2	5.2	0.1	1.6	2.5	3.9	4.7	5.3	5.3
POWER BOAT 25-40 FT	0.2	2.1	3.4	5.6	7.0	8.1	9.6	0.2	2.1	3.4	5.6	7.1	8.1	9.7
POWER BOAT 40-65 FT	0.3	2.6	4.5	8.3	11.3	13.3	16.7	0.2	2.5	4.5	8.3	11.1	13.4	16.8
POWER BOAT 65-90 FT	0.3	2.7	5.0	9.8	13.6	16.8	21.9	0.2	2.7	5.0	9.9	13.7	16.8	21.9
SAIL BOAT 15 FT	0.2	1.5	2.3	3.5	4.2	4.7	4.7	0.1	1.5	2.3	3.5	4.3	4.7	4.7
SAIL BOAT 20 FT	0.2	1.8	2.8	4.3	5.3	6.0	6.0	0.1	1.7	2.8	4.4	5.3	6.0	6.0
SAIL BOAT 25 FT	0.2	2.1	3.3	5.2	6.5	7.5	7.5	0.2	2.0	3.3	5.3	6.6	7.5	7.5
SAIL BOAT 30 FT	0.2	2.2	3.7	6.1	7.8	9.1	11.0	0.2	2.2	3.7	6.2	7.9	9.2	11.1
SAIL BOAT 40 FT	0.3	2.5	4.3	7.7	10.2	12.1	15.1	0.2	2.4	4.3	7.7	10.2	12.1	15.1
SAIL BOAT 50 FT	0.3	2.6	4.8	8.6	11.5	13.9	17.6	0.2	2.6	4.6	8.6	11.6	14.0	17.7
SAIL BOAT 65-75 FT	0.3	2.7	4.9	9.4	12.9	15.8	20.3	0.2	2.6	4.9	9.4	13.0	15.8	20.3
SAIL BOAT 75-90 FT	0.3	2.8	5.1	10.0	13.9	17.2	22.4	0.2	2.7	5.1	10.0	14.0	17.2	22.5
SHIP 90-150 FT	0.3	2.8	5.4	11.1	16.0	20.2	27.1	0.2	2.8	5.3	11.1	16.0	20.2	27.1
SHIP 150-300 FT	0.3	2.9	5.6	12.5	18.9	24.8	35.0	0.2	2.8	5.6	12.5	18.9	24.8	35.0
SHIP > 300 FT	0.3	2.9	5.7	13.2	20.7	27.9	41.5	0.2	2.9	5.7	13.2	20.7	27.9	41.5

- Visual searches are seldom conducted from altitudes above 3000 feet however for altitudes up to 5000 feet where visibility exceeds 3NM and target size exceeds 25 feet, the sweep widths given for 3000 feet remain applicable.
- Correcting for search aircraft speed, enter the Search Aircraft Speed Correction Table, Table 3.4, with aircraft air speed flown across the top then read down the column to the search object line. This value is the speed correction. Interpolate as required.

Example: Airspeed 120 knots, object raft – 1 to 4 man correction factor is 0.9.
 120 knots X 0.9 factor = 108 knots
 108 knots is the airspeed at which the search should be flown.

Table 3.3 Visual Sweep Width Estimates for Daylight Detection Aids

Device	Estimated Sweep Width (NM)	SRU Type
Red/Orange Balloon	0.5	Air or surface
Orange flight suit	0.5	Air
Red hand flare (500 candlepower)	0.5	Air or surface
Day/night flare	0.5	Air or surface
Red pen gun flare	0.75	Air or surface
Red reflective paulin	2.0	Air or surface
Tracer bullets	2.0	Air or surface
Green dye marker*	2.0	Air
Red/orange flag (waving) (3 ft X 3 ft)	2.5	Air or surface
Sun signal mirror	5.0	Air or surface
White parachute	5.0	Air or surface
Red meteor (star) or parachute flare (10,000 candlepower)*	6.0	Air or surface

*Greatly reduced in heavy seas

Table 3.4 Search Aircraft Speed Correction Table

Search Object	Fixed Wing Speed (Knots)			
	90	120	140	150
Person in Water	1.0	0.8	0.7	1.2
Raft – 1 to 4 Man	1.0	0.9	0.8	1.1
Raft – 6 to 25 Man	1.0	0.9	0.8	1.1
Power Boat – 0 to 24 ft.	1.0	0.9	0.8	1.1
Power Boat – 25 to 40 ft	1.0	0.9	0.9	1.1
Power Boat – 40 to 65 ft	1.0	0.9	0.9	1.1
Power Boat – 65 to 90 ft	1.0	1.0	0.9	1.1
Sail Boat –1 to 26 ft	1.0	0.9	0.9	1.1
Sail Boat – 26 to 52 ft	1.0	0.9	0.9	1.1
Sail Boat – 52 to 90 ft	1.0	1.0	0.9	1.1
Ship – Over 90 ft	1.0	1.0	0.9	1.0

H. METHODS OF NAVIGATION

1. An essential factor in the successful implementation of a search is the ability of the Auxiliary aviator to navigate and the accuracy of the navigation. Three navigation techniques are normally available to the pilot or navigator. They are:
 - a. Piloting - The visual observance of surface features and their correlation with the symbols used to represent the features on a chart in order to determine aircraft location and course.
 - b. Dead Reckoning - The application of aircraft heading and true airspeed, adjusted for reported or observed wind conditions, to determine the position and course of the aircraft in relationship to a previous visual or electronic fix.
 - c. Electronically Assisted Navigation - The use of LORAN, GPS, VOR, ADF, DME or RADAR to determine aircraft location and course.
2. Combinations of these methods can be used. Unless nearby surface references are available aircraft should not be used for SAR missions if they are not equipped with GPS or LORAN.

I. FLYING A SEARCH PATTERN

1. In flying search patterns, precise maneuvering of the aircraft is desired. Unless nearby surface references are available or accurate electronic-assisted navigation can be used, precise search patterns required for effective search can only be maintained through accurately timed turns and straight-track legs. To simplify the accomplishment of accurate turns, it is recommended that all turns during pattern flights (except with precise visual or electronic fixes) be standard rate turns, i.e. 3 degrees per second, as shown by the turn and bank indicator or turn coordinator.
2. The effects of cross winds must be taken into consideration.
3. Keep in mind the differing lag rates of LORAN and GPS receivers. Pilots should instruct crewmembers on how to interpret these units.
4. Fly at airspeeds that are easy to convert. For example, at 90 knots your aircraft will cover 1.5 nautical miles per minute on a straight leg and will cover .5 nautical mile encroachment in a 90 degree turn.

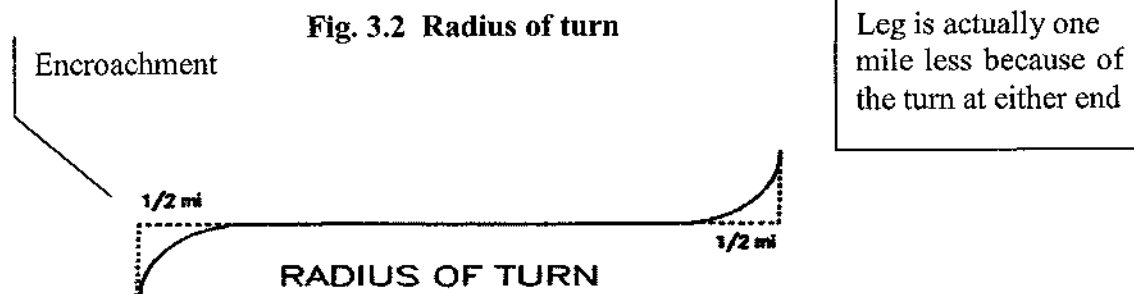


Table 3.5 Speed Table

DISTANCE	SPEED IN KNOTS					
NM	70	80	90	100	110	120
.5	0:26	0:22	0:20	0:18	0:16	0:15
1	0:51	0:45	0:40	0:36	0:33	0:30
2	1:42	1:30	1:20	1:12	1:05	1:00
3	2:34	2:15	2:00	1:48	1:37	1:30
4	3:25	3:00	2:40	2:24	2:11	2:00
5	4:17	3:45	3:20	3:00	2:43	2:30
6	5:08	4:30	4:00	3:36	3:16	3:00
7	6:00	5:15	4:40	4:12	3:48	3:30
8	6:51	6:00	5:20	4:48	4:22	4:00
9	7:43	6:45	6:00	5:24	4:54	4:30
10	8:34	7:30	6:40	6:00	5:27	5:00

J. SEARCH PATTERN GROUPINGS:

1. First Letter (Search pattern type):

T - TRACK LINE
P - PARALLEL
C - CREEPING LINE
S - SQUARE
V - SECTOR
B - BARRIER

2. Second Letter (Number of search units in the same search area):

S - SINGLE UNIT
M - MULTI-UNIT

3. Third letter (Amplifying/supplementary information):

R - RADAR or RETURN SEARCH
C - COORDINATED OR CIRCLE SEARCH
L - LORAN
A - ARC
S - SPIRAL
N - NON-RETURN SEARCH
D - DRIFT COMPENSATED

Example -- A 'PSR' search would be a parallel search, using one unit, controlled by radar.

K. SEARCH PATTERN TERMINOLOGY:

1. Refer to figure 3.3

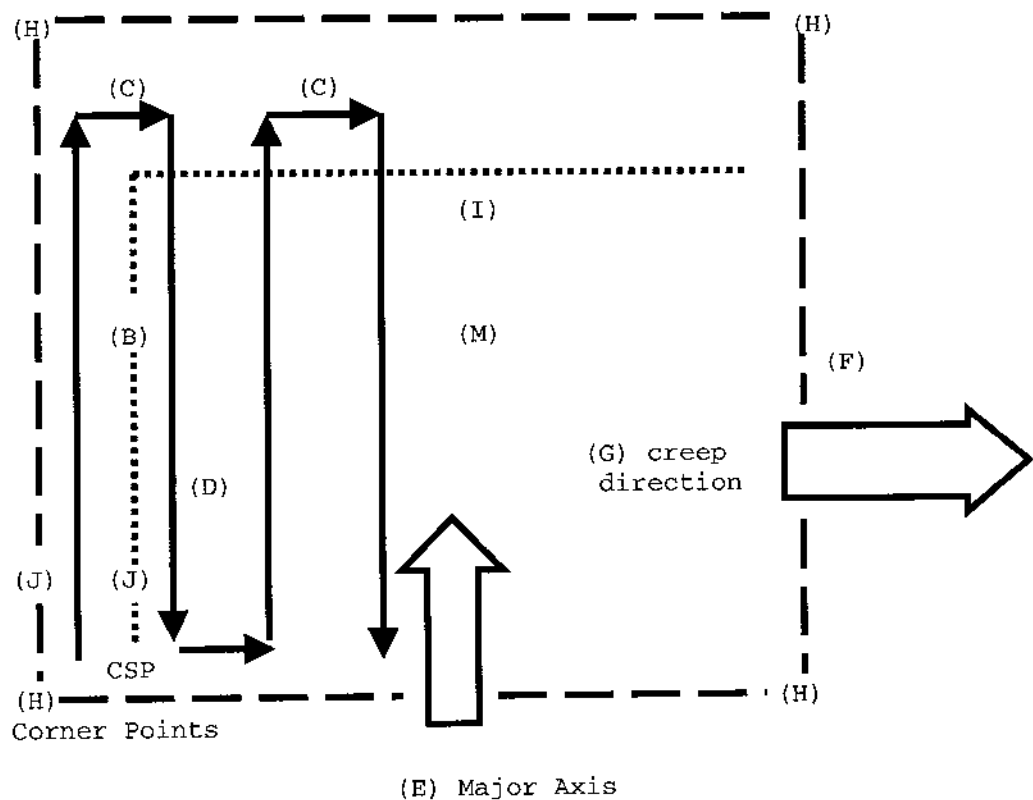
Table 3.6 Search Pattern Terminology

A	COMMENCE SEARCH POINT (CSP)	STARTING POINT OF PATTERN
B	SEARCH LEG	LONG LEG OF ANY PATTERN
C	CROSS LEG	CONNECTING LEG
D	TRACK SPACING	DISTANCE BETWEEN TWO PARALLEL LEGS
E	MAJOR AXIS	LONGEST LEG OF SEARCH PATTERN
F	MINOR AXIS	SHORTEST LEG OF SEARCH PATTERN
G	CREEP DIRECTION	MINOR AXIS DIRECTION OF MOVEMENT
H	CORNER POINTS	DEFINE THE SEARCH AREA
I	DATUM	MOST PROBABLE LOCATION OF TARGET (CORRECTED)
J	SWEEP WIDTH (W)	DISTANCE ON BOTH SIDES OF THE SRU

Table 3.6 Search Pattern Terminology cont.

K	GROUND SPEED	SPEED ACROSS THE GROUND
L	PROBABILITY OF DETECTION (POD)	THE PROBABILITY THAT A TARGET WILL BE FOUND
M	CENTER POINT	REFERENCE DEFINING THE CENTER OF THE SEARCH AREA.

Fig. 3.3 Search Pattern Terminology



CSP is where the search commences.

Solid line represents the aircraft track, both search legs and cross legs.

A dotted line represents the search area.

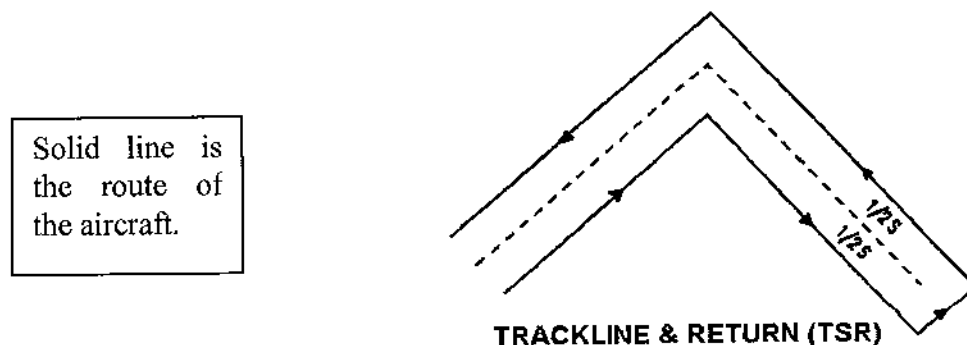
L. TYPES OF SEARCH PATTERNS

1. Search patterns for use in search and rescue operations by Auxiliary aircraft are divided into the following main groups:
 - a. Group 1 - Track line Patterns (T)
 - b. Group 2 - Parallel Track Patterns (P)
 - c. Group 3 - Creeping Line Patterns (CS)
 - d. Group 4 - Square Patterns (S)
 - e. Group 5 - Sector Patterns (V)
 - f. Group 6 - Contour Search (O)
2. These groups are broken down into specialized patterns within each group. Search patterns of the same group are differentiated primarily by whether individual or formation search is employed, whether an "Air-Surface Team" is used, or by the position of the entry and departure points of the search in case of the track line. Only the single aircraft type search patterns will be discussed in this text.

M. TRACK LINE SEARCH PATTERN (Route Search)

1. This pattern is generally used where an aircraft or vessel is missing and the intended route of the missing craft is the only search lead. A route search is usually the first physical search action taken since it must be assumed that the distressed craft is on, or adjacent to its proposed route and that it will be easily discernible, or that there will be survivors capable of signaling when they hear or sight search aircraft. The track crawl consists of rapid and reasonably thorough coverage of the missing targets proposed route and of the immediately adjacent areas.

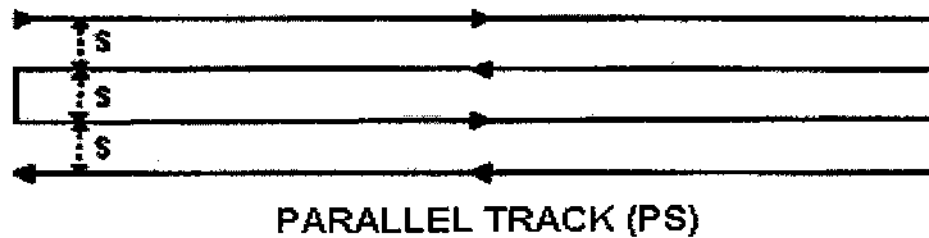
Fig. 3.4 Track Line Search



N. PARALLEL TRACK PATTERNS (PS)

1. These patterns are most often selected when the area to be searched is large and a uniform coverage is desired. Information concerning the target is limited to knowledge of the approximate area, and there is equal probability that the target is located anywhere in this area. This pattern is best adapted to rectangular or square areas.

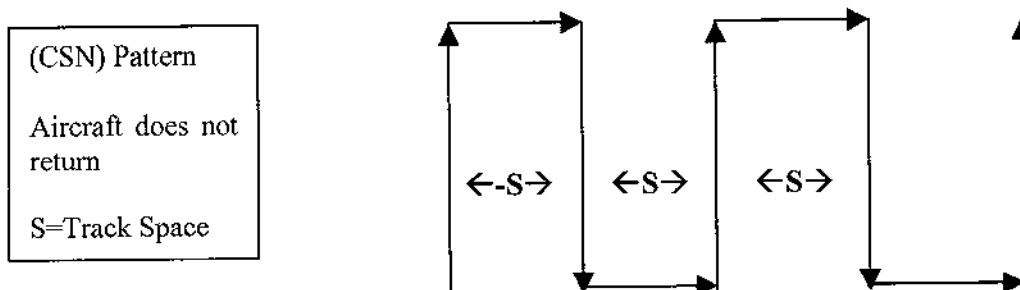
Fig. 3.5. Parallel Track Pattern



O. CREEPING LINE PATTERNS (CS)

1. These patterns differ from the parallel track pattern only in that the search legs are parallel to the short axis of a rectangular area. They are generally selected when rapid advancement of successive search legs along a given track is desired. The most probable area is covered first.
2. Information concerning the target is limited to an area between two points where the distress position may be on either side of the original track due to navigational error or drift.

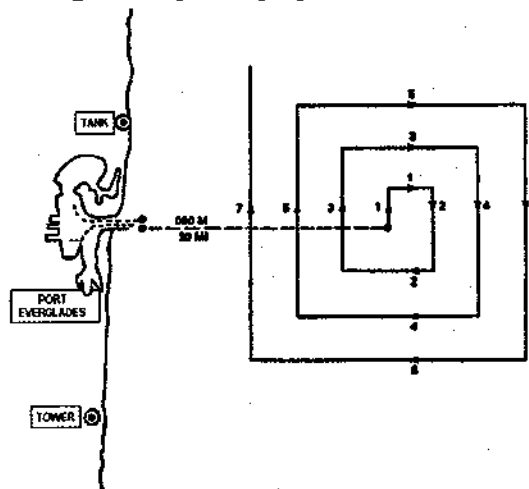
Fig. 3.6 Creeping Line Pattern



P. Expanding Square Pattern (SS)

1. This pattern is used for concentrated search of a small area where the position of survivors is known within close limits and the area to be searched is not extensive.
2. If an error in position is expected or if the target is moving, bailout, aircraft about to ditch, ship, life raft, or survivors in PFD's that are drifting or proceeding very slowly. The expanding square pattern may be modified to an expanding rectangle with long legs running in the direction of the probable movement of the target.
3. In an expanding square pattern the first two legs are 1 track spacing long, legs 3 and 4 are 2 track spacings long, etc. Note that a disadvantage of use of this pattern for aircraft is that it calls for 90-degree turns, particularly when close to datum. This may unacceptably hamper the aircrew's field of vision while the aircraft is in a banked attitude. A more applicable search pattern for an aircraft would be the sector search.

Fig. 3.7 Expanding Square Pattern



Q. Sector Search Patterns (VS)

1. The sector search pattern is used when the position of distress is known within close limits and the area to be searched is not extensive. It is simple to execute, provides for navigational accuracy, and is flexible. The track spacing is small near the center point of the search and larger at the extremities, resulting in an increased probability of detection near the center of the search area, the most likely position of the distress. The search unit passes through the datum many times, each time increasing the chance of finding the search object. (See Figure 3.7) If a drifting datum marker has been deployed, the datum point for the search may be re-oriented as the aircraft passes over the datum marker. This adjusts the search area for the drift of the target.

2. GPS or LORAN should be used to mark the datum coordinates. The first leg is generally in the direction of the datum drift. All turns are 120 degrees to the right. All legs are equal to the search radius. In the sector search, it is imperative that the rules of encroachment be applied. The turn must be started early in order to intercept the proper cross leg. At 90kts start each turn 0.5 NM before the end of the leg and complete the turn 0.5 NM into the next leg.

Example: Three mile radius at 90kts:

- a. 1st leg hdg. 360 degrees for 2.5 NM (Start turn at 2.5 miles)
- b. 2nd leg hdg. 120 degrees for 2.0 NM (encroachment adjusted at each end)
- c. 3rd leg hdg. 240 degrees for 2.5 NM (this brings you back to the datum)
- d. 4th leg hdg. 240 degrees for 2.5 NM (Complete the pattern with five more legs)
- e. Complete the pattern with 5 more legs

Table 3.7 Encroachment Distances

SPEED	START TURN AT
90 KTS	0.50 NM
100 KTS	0.55 NM
110 KTS	0.60 NM
120 KTS	0.65 NM

Fig. 3.8 Sector Search Pattern

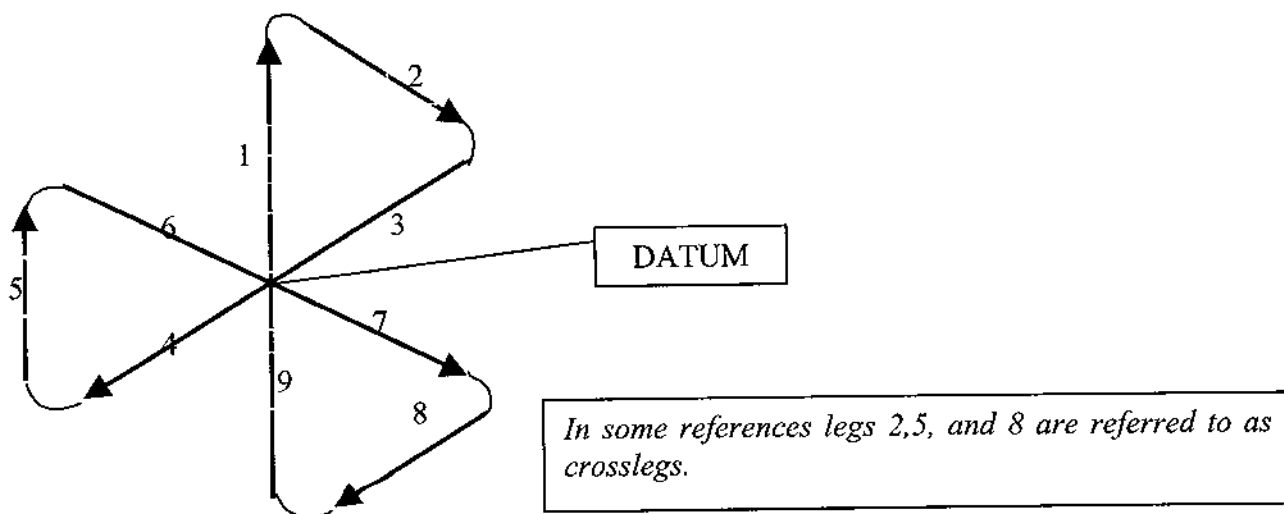


Table 3.8 Sector Search Pattern Time Chart

Sector Search Pattern Time Chart							
Time in minutes per leg at 90 knots using 60 degrees between legs							
Leg #	Hdg.	3 miles pattern			5 mile pattern		
		Distance	Time	Turn Time	Distance	Time	Turn Time
1	360	2.5	1:40	:40	4.5	3:00	:40
2	120	2.0	1:20	:40	4.0	2:40	:40
3-4	240	5.0	3:20	:40	9.0	6:00	:40
5	360	2.0	1:20	:40	4.0	2:40	:40
6-7	120	5.0	3:20	:40	9.0	6:00	:40
8	240	2.0	1:20	:40	4.0	2:40	:40
9	360	2.5	1:40	:40	4.5	3:00	:40

3. There are two methods of increasing the area covered by a (VS) search:
 - a. Change the standard angle from 60 degrees to 30 degrees.
 - b. After the first search is completed, start a second search with the first leg being 30 degrees greater.

For example: If the first search started with the first leg being 90 degrees, the second search series would start with the first leg being 120 degrees.

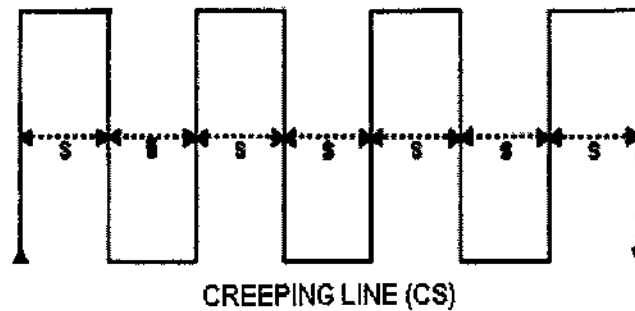
Keep in mind that these patterns are given to you by the SMC or group.

R. Creeping Line Coordinated Search (CSC)

1. In this procedure, an aircraft and a surface vessel work together in a coordinated search. It results in more accurate navigation and coverage within the search area. This coordinated search consists of the aircraft flying the creeping line pattern, flying tracks at right angles to the course of the boat, while the boat is using a track line pattern.
2. The length of the aircraft leg is laid out so that the advance of the aircraft equals that of the surface vessel, thus the aircraft passes over the boat on each leg.

3. The speeds of the vessel and the aircraft must be coordinated to fit the speed limitations of both units. The aircraft should always be within 10 Nautical miles of the boat.

Fig. 3.9 Creeping line Coordinated Search



S. USE OF ELECTRONIC AIDS IN SEARCH

1. Determining the exact position of the search aircraft relative to the selected search pattern and flying a prescribed course are the most difficult tasks in aircraft searches. These difficulties are magnified when searching over water where adequate visual references are not available. To help overcome these difficulties, use of electronic navigational aids should be made.
2. A variety of electronic equipment is available for use in aiding aircraft navigation. Most Auxiliary aircraft will have one or more of the following aids available:
 - a. VOR (Very High Frequency Omni-directional Range) receiver
 - b. ADF (Automatic Direction Finder) receiver
 - c. DME (Distance Measuring Equipment) receiver
 - d. LORAN (Long Range Navigation) C navigation computer
 - e. GPS (Global Positioning System) navigation computer
3. In addition, with the assistance of FAA or military surface equipment and personnel, the search aircraft may be tracked by surface radar and vectored by means of radio communications. A transponder installed aboard the search aircraft will facilitate vectoring and will permit the radar operator to work the aircraft at lower altitudes and at greater distances. Since the Auxiliary zone of search operations will usually be limited to within 25 miles of shore, there are generally many civil and military installations with radar and many FAA navigational aids within the normal range of Auxiliary aircraft equipment.

T. MULTI-AIRCRAFT USE

1. Pre-Brief: When multi-aircraft searches are anticipated it is important to thoroughly pre-brief the mission so that all pilots understand:
 - a. Exactly who is the OSC, if one has been assigned, and their responsibilities and authority.
 - b. The frequencies to be used for air to air, air to surface and by the controlling unit or SMC. The primary and secondary frequencies should be known by all concerned.
 - c. The exact boundaries of the assigned search areas.
 - d. The altitude to use while in the assigned area. (This should be a different altitude from aircraft in the adjoining areas so that separation is provided).
 - e. The altitude to use in route to and from the assigned search area. This should be above the altitudes being used by the aircraft within the search area.

U. ON SCENE COMMANDER (OSC)

1. If an OSC has been assigned, it is the responsibility of the participating aircraft to maintain communications with the OSC and report all significant sightings. The OSC shall be informed when search areas are near completion so that additional search areas can be assigned or other instructions given. It is the responsibility of the participating aircraft to comply with instructions given by the OSC unless the aircraft is unable to do so because of fuel, weather or safety related issues or regulatory prohibition. Any inability to comply with instructions given by the OSC must be immediately and clearly communicated to the OSC.

V. LAYERED SEARCHES

1. There may be occasions where more than one aircraft may be searching the same area at different altitudes. The Auxiliary aircraft may have a fixed wing aircraft such as an HU-25 Falcon or C-130 Hercules above and an HH-65 Dolphin or HH-60 Jayhawk working below the assigned altitude. In these cases it is imperative that assigned altitude be maintained within the search area. If a target is sighted that requires investigation, any descent must be coordinated with the other aircraft. Advise leaving an assigned altitude and advise upon return to the assigned altitude. Likewise, when ready to depart the search area the pilot must coordinate the departure.

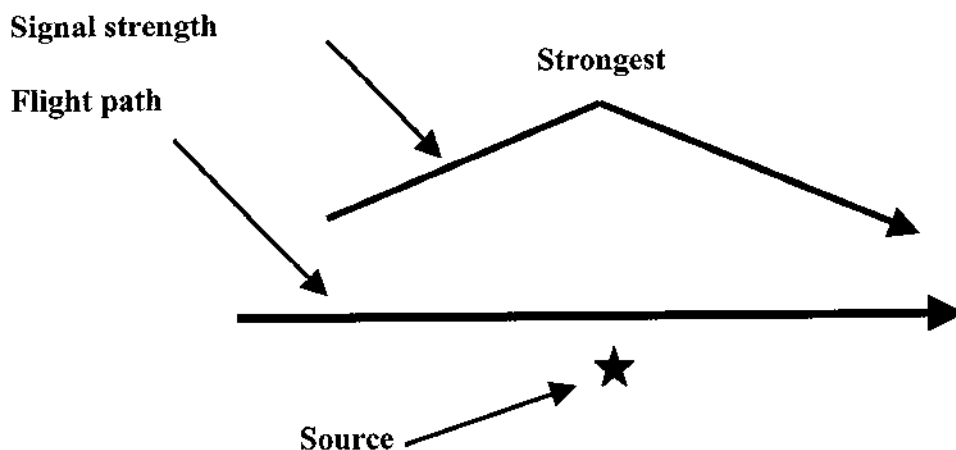
W. ELT-EPIRB SEARCH

1. The Coast Guard is often tasked to search for emergency beacons transmitting in coastal areas. The source may be an EPIRB or an ELT. Auxiliary aircraft are not

usually equipped with the sophisticated equipment used for these searches. However a method exists whereby they can search for transmitting ELT's using the standard aircraft radio receivers. The signals are transmitted on 121.5 MHz.

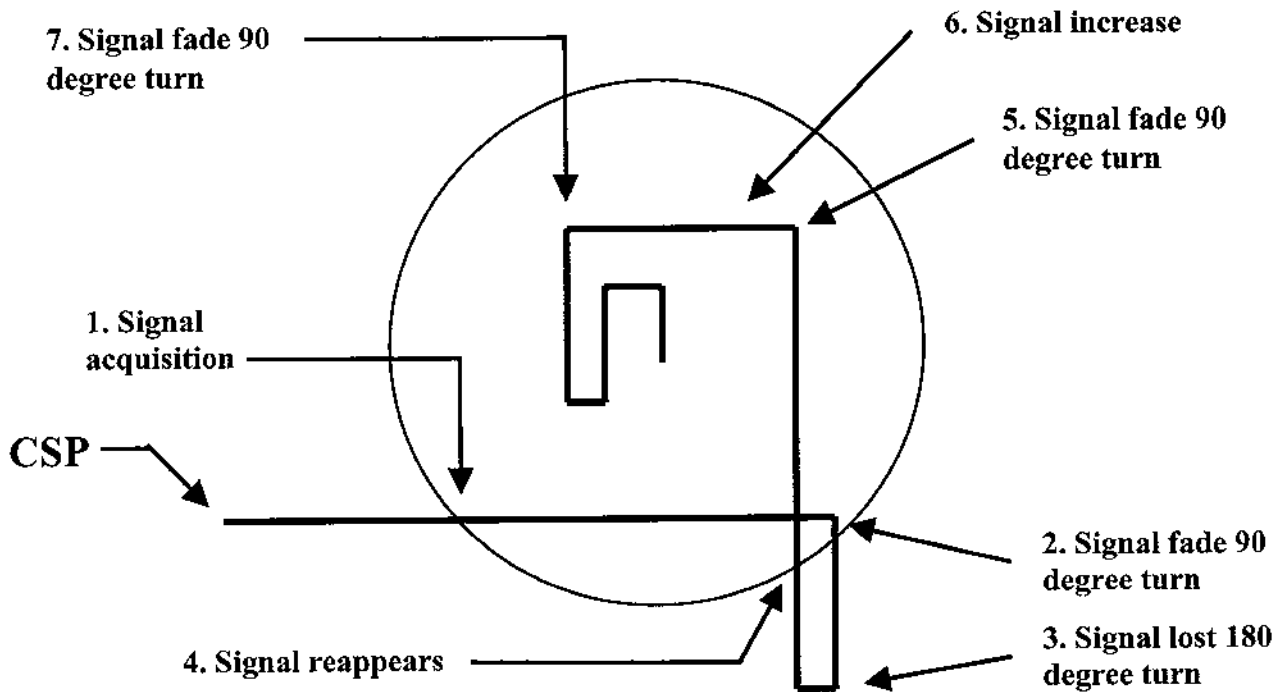
2. The build and fade method is used to estimate, by means of audio signal strength, the position of a transmission. Flying a sequence of tracks, while monitoring 121.5, allows the crew to home in on the source. The estimate is made by noting the trend of the signal strength. As the aircraft approaches the source the signal gets louder, it will fade as the aircraft flies away.

Fig. 3.10 Build and Fade Detection



3. Steps:
 - a. When the ELT/EPIRB signal is heard adjust your receiver volume as low as possible to more quickly detect the fade. Adjust the squelch control to just before the cut off point. Once adjusted DO NOT MODIFY THE SETTINGS. Note your position.
 - b. Continue on the same course. If the signal fades you are flying away from the source. Reverse course doing a 180-degree turn. If the signal builds continue on course until it starts to fade. Note your position.
 - c. Fly back to the position of strongest reception. The target source will be either 90-degrees to the left or right of your position. (Or directly under your aircraft.)
 - d. Turn either left or right 90 degrees. If the signal fades turn 180 degrees. If it builds, continue on course.

Fig. 3.11 Build and Fade Search



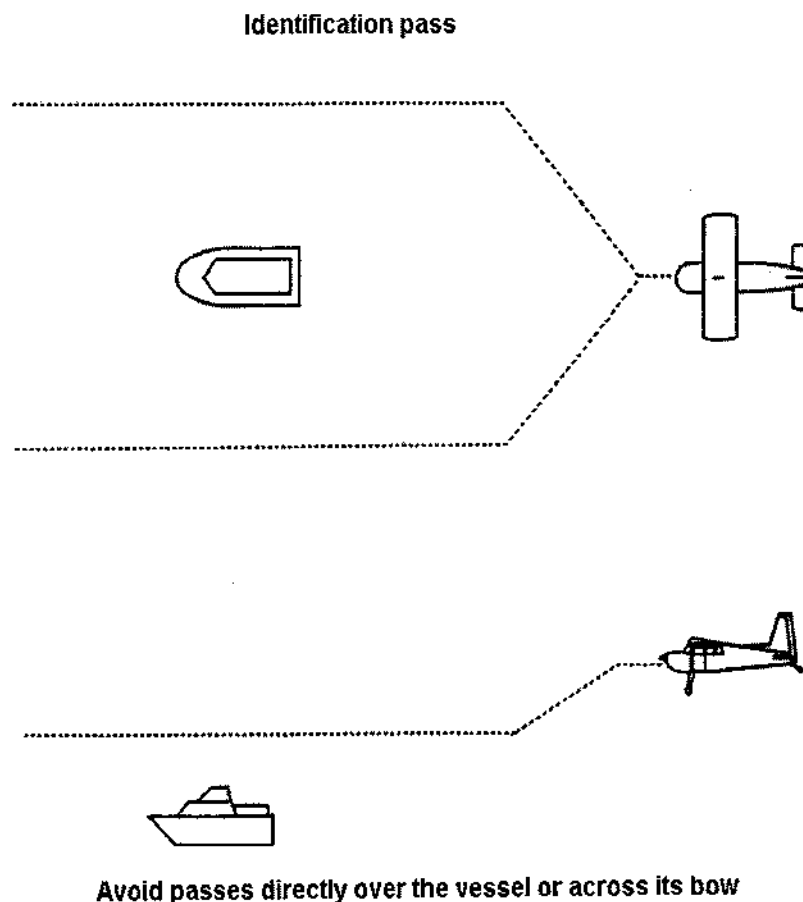
4. If the signal is so strong that you can not detect build or fade, try shifting to 121.6 or 121.4 Mhz to reduce the signal strength.

X. IDENTIFICATION PASSES

1. Planning: When a low pass is required to identify a vessel it must be done in such a way as to not cause concern to the personnel on the vessel, and to maintain a margin of safety for the aircrew. Maintaining an adequate level of safety while performing this maneuver dictates the maneuver be accomplished only if an alternative plan of action is well thought out to allow for mechanical difficulty if it should be experienced during the pass. The flight crew should be briefed prior to the pass to know exactly what to look for on the vessel and what to do in the event of an aircraft mechanical emergency.
2. Low-level flight: This regime is inherently dangerous. It is implicit that Auxiliary pilots should not operate in this regime unless qualified and current, then only under orders for an actual SAR mission. To do otherwise is not only dangerous but may expose the Auxiliary pilot to FAA certificate action. Auxiliary pilots therefore are not authorized to penetrate below 500 feet Above Ground Level (AGL) for any purpose unless it is to aid people in distress or to save or protect property. For additional information review chapter 12 paragraph H.2.

3. Route: The let down for the pass should be made some distance from the vessel and the altitude stabilized prior to passing the vessel. The pass should be made parallel to the vessel or across its stern at sufficient distance that the personnel on board do not feel threatened by the pass. It is preferable to have the vessel on the starboard side of the aircraft so the observer can make the necessary observations. The pilot's only responsibility during the pass is to fly the aircraft. Do not fly any lower or closer than is absolutely necessary to note the features needed for identification. Avoid passing directly over the vessel. Repeated passes should be avoided.

Fig. 3.12 Identification Pass



4. Speed: The approach and pass should be made at a safe airspeed with the aircraft configured well above slow flight (minimum controllable airspeed) yet slow enough to assure confirmation of a sighting. At the minimum airspeed of our Auxiliary aircraft, the pass will occur quickly and thus only a cursory observation can be made. There is no need to endanger the aircraft and its crew and no practical advantage by flying too low and slow.